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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,619	07/07/2003	Shigeki Nagase	F-7881	4962

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EXAMINER

DAVIS, OCTAVIA L

ART UNIT PAPER NUMBER

2855

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/614,619

Applicant(s)

NAGASE ET AL.

Examiner

Octavia Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6 and 13 - 16 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-9 is/are rejected.
- 7) ☒ Claim(s) 10-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/7/03</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claims 10 - 12 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim must refer to one independent claim in the alternative only. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 – 5, 7, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kimura et al.

Regarding claim 1, Kimura et al disclose a torque detecting apparatus comprising a first shaft 101, a second shaft 102 capable of rotating elastically with respect to said first shaft, a first alternating signal output means 113 for outputting a first alternating signal of which phase changes according to changes in the rotation angle of said first shaft, a second alternating signal output means 113 for outputting a second alternating signal of which phase changes according to changes in the rotation angle of said second shaft and an output signal processing unit 113 for outputting a phase difference correspondence signal of which waveform changes according to changes in the phase difference between said first alternating signal and second alternating

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signal, wherein a value corresponding to a torque transmitted by the first and second shafts is found from said phase difference correspondence signal (See Col. 9, lines 1 – 17 and 29 – 40).

Regarding claims 2 and 3, the first alternating signal output means comprises a first detector 111 and a first signal processing unit U, said first detector outputs a first sine amplitude signal and a first cosine amplitude signal (See Fig. 7), the processing unit includes a first phase shift circuit U producing a first phase shift signal and a first addition circuit 113a, said second alternating signal output means comprises a second detector and a second signal processing unit, said second detector 111 outputs a second sine amplitude signal, and a second cosine amplitude signal, said second signal processing unit including a second phase shift circuit U producing a second phase shift signal and a second addition circuit (See Cols. 9 and 10, lines 40 – 64 and 24 – 34).

Regarding claim 4, said detectors 111 are relatively arranged so that the phase difference between said first alternating signal and second alternating signal becomes a set value when the torque transmitted by said first and second shafts is zero (See Col. 10, lines 37 – 43) and the processor includes a logic signal conversion circuit 113B for converting said first alternating signal into a first logic signal, a second logic signal conversion circuit for converting said second alternating signal into a second logic signal, and a PWM processing circuit 146 for outputting a PWM signal (See Col. 9, lines 59 – 68, Col. 10, lines 1 – 34 and Col. 11, lines 1 – 16).

Regarding claim 5, a circuit detects the leading edge and the trailing edge of said first logic signal, and the PWM processing circuit outputs a PWM difference corresponding to the leading edge and the trailing edge (See Col. 11, lines 1 – 11).

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Regarding claim 7 – 9, the output signals of the detectors and the phase difference signal are input to a computer 113A, a reference torque value corresponding to the difference in the rotation angle between the two shafts is found from the output signals of the two detectors, and the deviation between the detected torque value corresponding to the phase difference correspondence signal and said reference torque value is found with said computing device which also samples the output values and discriminates the rotational direction based on the polarity of the torque (See Col. 9, lines 3 – 19 and 10, lines 55 – 68).

Regarding claim 9, a reference torque value is found by A/D converting the output signals of the two detectors utilizing converters 114, 144 (See Col. 10, lines 55 – 63 and Col. 11, lines 1 – 16).

Allowable Subject Matter

4. Claims 6 and 13 - 16 are allowed.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kelledes et al (4,805,463) teach a torque transducer having input and output members which measure applied forces therebetween.

Ueno et al (5,398,555) teach a torque detection apparatus of a power train.

Miyashita et al (3,599,039) teach a phase-synchronized rotating system.

Madni et al (6,520,031) teach a non-contacting torque sensor.


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6. Any inquiry concerning this communication should be directed to Examiner Octavia Davis at telephone number (571) 272 - 2176. The examiner can normally be reached on Monday - Thursdays (9:00 - 5:00), Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz, can be reached on (571) 272 - 2180. The fax phone number for the organization where this application where this application or proceeding is assigned is (703) 872 - 9306.

OD/2855

8/18/04


EDWARD LEFKOWITZ
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